NATIONAL MARROW DONOR PROGRAM®

Entrusted to operate the C.W. Bill Young Cell Transplantation Program,
including Be The Match Registry®

January 27, 2012

CDR Sheri Parker
Office of Naval Research (ONR 342)
875 N. Randolph St.
Arlington, VA 22203-1995

Subject: **Quarterly Performance/Technical Report of the National Marrow Donor Program®**

Reference: Grant Award #N00014-11-1-0339 between the Office of Naval Research and the National Marrow Donor Program

Dear Cdr. Parker:

Enclosed is subject document which provides the performance activity for each statement of work task item of the above reference for the period of October 1, 2011 to December 31, 2011.

Should you have any questions as to the scientific content of the tasks and the performance activity of this progress report, you may contact our Chief Medical Officer – Dennis L Confer, MD directly at 612-362-3425.

With this submittal of the quarterly progress report, the National Marrow Donor Program has satisfied the reporting requirements of the above reference for quarterly documentation. Other such quarterly documentation has been previously submitted under separate cover.

Please direct any questions pertaining to the cooperative agreement to my attention at 612-362-3403 or at cabler@nmdp.org.

Sincerely,

Carla Abler-Erickson

Carla Abler-Erickson, MA
Sr. Contracts Representative

Enclosure: Quarterly Report with SF298

C: D. Ivery – ACO (ONR-Chicago)
Dr. Robert J. Hartzman, CAPT, MC, USN (Ret)
Jennifer Ng, PhD – C.W. Bill Young Marrow Donor Recruitment and Research Program
J. Rike - DTIC (Ste 0944)
NRL (Code 5227)
Dennis Confer, MD, Chief Medical Officer, NMDP
Stephen Spellman

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
27-01-2012	Quarterly	Oct – Dec 2011

4. TITLE AND SUBTITLE
Development of Medical Technology for Contingency Response to Marrow Toxic Agents - Quarterly Performance/Technical Report for October 01, 2011 to December 31, 2011 Period 4

5a. CONTRACT NUMBER
N/A

5b. GRANT NUMBER
N00014-11-1-0339

5c. PROGRAM ELEMENT NUMBER
N/A

6. AUTHOR(S)
Spellman, Stephen

5d. PROJECT NUMBER
N/A

5e. TASK NUMBER
Project 1, 2, 3, 4

5f. WORK UNIT NUMBER
N/A

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
National Marrow Donor Program
3001 Broadway St., N.E., Ste. 500
Minneapolis, MN 55413

8. PERFORMING ORGANIZATION REPORT NUMBER
N/A

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Office of Naval Research
875 N. Randolph St.
Arlington, VA 22203

10. SPONSOR/MONITOR'S ACRONYM(S)
ONR

11. SPONSORING/MONITORING AGENCY REPORT NUMBER
N/A

12. DISTRIBUTION AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited

13. SUPPLEMENTARY NOTES
N/A

14. ABSTRACT

1. Contingency Prepardness: Collect information from transplant centers, build awareness of the Transplant Center Contingency Planning Committee and educate the transplant community about the critical importance of establishing a nationwide contingency response plan.

2. Rapid Identification of Matched Donors : Increase operational efficiencies that accelerate the search process and increase patient access are key to preparedness in a contingency event.

3. Immunogenetic Studies: Increase understanding of the immunologic factors important in HSC transplantation.

4. Clinical Research in Transplantation**:** Create a platform that facilitates multicenter collaboration and data management.

15. SUBJECT TERMS
Research in HLA Typing, Hematopoietic Stem Cell Transplantation and Clinical Studies to Improve Outcomes

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE	Same as Report	21	Dennis L. Confer, MD – Chief Medical Office
U	U	U			19b. TELEPONE NUMBER (*Include area code)* 612.362.3425

NATIONAL MARROW DONOR PROGRAM®

Creating Connections. Saving Lives.™

Grant Award N00014-11-1-0339

DEVELOPMENT OF MEDICAL TECHNOLOGY FOR CONTINGENCY RESPONSE TO MARROW TOXIC AGENTS

QUARTERLY PERFORMANCE / TECHNICAL REPORT

FOR

OCTOBER 01, 2011 to DECEMBER 31, 2011

PERIOD 4

Office of Naval Research

And

The National Marrow Donor Program
3001 Broadway Street N.E.
Minneapolis, MN 55413
1-800-526-7809

TABLE OF CONTENTS

IIA. Contingency Preparedness – Objective 1: Recovery of casualties with significant myelosuppression following radiation or chemical exposure is optimal when care plans are designed and implemented by transplant physicians	
IIA.1 Task 1: Secure Interest of Transplant Physicians	**Period 4 Activity:** • Advanced Medical Radiation Response training was held on October 17-18 at the Radiation Emergency Assistance Center and Training Site in Oakridge, TN for 23 RITN center staff, including five (5) physicians/physician multipliers
IIA.1 Task 2: GCSF in Radiation Exposure	**Period 4 Activity:** • 125 physicians, medical staff, researchers and emergency planners attended the RITN State of the Science Workshop: Radiation Exposure, Medical Countermeasures and Treatment in Chicago, IL on October 11. • Speakers and topics included: o "Where We Are and Where We Are Going"-Richard Hatchett (DHHS-BARDA) o **Biodosimetry:** ▪ High-Throughput Minimally-Invasive Radiation Biodosimetry-Sally Amundson (Columbia) ▪ Informing Biosignatures with Data from Model Systems-Joseph Lucas (Duke) ▪ Physical Biodosimetry for Triage After a Large Scale Radiation Event-Harold Swartz (Dartmouth) o **Supportive Care:** Medical Countermeasures for the ARS: Evidence Based Support and the FDA Animal Rule- Tom MacVittie (Univ. Maryland) o **Hematopoietic and Immune System Reconstitution:** ▪ Combined Radiation Injury-Nelson Chao (Duke) ▪ Stem Cell-Based Therapies for Acute Radiation Syndrome-Chandan Guha (Albert Einstein College of Medicine)

- Novel Mitigators of the Hematopoietic Syndrome-John Chute (Duke)
- Strategies to Enhance Immune Reconstitution Post Irradiation-Marcel van den Brink (Memorial Sloan Kettering Cancer Center)

- **Organ Toxicity:**
  - Pulmonary Toxicity-Zeljko Vujaskovic (Duke)
  - Gastrointestinal Organ Toxicity-Martin Hauer Jensen (Univ. of Arkansas for Medical Sciences)
- **Radiation Biology:**
  - Design of Mitochondria-Targeted Radio Protectors/Mitigators-Valerian Kagan (Univ. Pittsburgh)
  - The Role of P53 in Acute Radiation Injury and Late Effects from Radiation- David Kirsch (Duke)
- **Guided Discussion:** Autologous Cell Collection for Radiological Disaster Responders- David Weinstock (Dana Farber Cancer Institute)
- Global Consensus on Evidence-Based Management of Acute Radiation Syndrome- Nickolas Dainiak (Yale) and Viktor Meineke (Bundeswehr-Germany Military)
- **Keynote:** Experience in Japan During the Fukushima Incident- Robert Bazell (NBC News)

- Attendees provided excellent evaluations of the speakers and topics covered:
  - The overall conference rating was 4.67 out of a possible of 5.0
  - 100% of evaluators reported learning something new during the conference
  - 85% of evaluators indicated that they will apply information learned in their practice
  - 21 % of evaluators attended the 2009 RITN conference
- The day following the conference a closed meeting was held to review three key concepts related to a radiological incident:

	○ Define when a victim crosses the threshold from solely requiring intensive supportive care to requiring HCT. ○ Determine best practices used to expand available care when confronted with mass casualties with marrow toxic injuries. ○ Determine what level of additional review is necessary to gather agreement for each area.
IIA.1 Task 3: Patient Assessment Guidelines and System Enhancements	**Period 4 Activity:** • Held the RITN State of the Science Workshop: Radiation Exposure, Medical Countermeasures and Treatment
IIA 1 Task 4: National Data Collection Model – This task is closed.	
IIA. Contingency Preparedness – Objective 2: Coordination of the care of casualties who will require hematopoietic support will be essential in a contingency situation.	
IIA.2 Task 1: Contingency Response Network	**Period 4 Activity:** • Conducted site assessments of three (3) RITN transplant centers; assessments reviewed critical areas necessary for responding to a mass casualty incident with marrow toxic injuries ○ These areas are: victim processing, outpatient treatment of victims, inpatient treatment of victims, coordination with region, state or federal agencies; documentation review • As of December 31, 2011 RITN consisted of: 47 – transplant centers, 7 - donor centers, and 7 - cord blood banks • 85% of RITN centers completed the required annual tasks as of the deadline of December 31, 2011 ○ Nine centers were given extensions due to extenuating circumstances ○ Previous year's data: FY10-94%, FY09-98%, FY08-96%, FY07-96%, FY06-92% • RITN Medical Advisor activity; Dr. Weinstock participated in the following activities supporting the Radiation Injury Treatment Network: ○ He was a featured speaker on the response to the Fukushima Daiichi nuclear power plant incident by the HSCT community at the RITN State of the Science Meeting in Chicago, IL

	on October 11, 2011. o He was co-Chair of the Planning Committee for the RITN State of the Science Meeting in Chicago, IL on October 11, 2011. o He was moderator of the RITN Executive Committee Roundtable Discussion in Chicago, IL on October 11, 2011. o He helped co-author: ▪ The manuscript, "First Global Consensus for Evidence-Based Management of the Hematopoietic Syndrome Resulting From Exposure to Ionizing Radiation". Disaster Medicine and Public Health Preparedness 2011;5:202-12. ▪ The manuscript, "Literature Review and Global Consensus on Management of Acute Radiation Syndrome Affecting Nonhematopoietic Organ Systems" in Disaster Medicine and Public Health Preparedness 2011;5:183-201. ▪ a manuscript *in press* for Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science ▪ a manuscript *in press* for Leukemia on response to the Fukushima Daiichi nuclear power plant incident ▪ a manuscript in preparation for Lancet on response to radiation incidents o He assisted with the 2011 update of the RITN-sponsored online radiation basics course o He represented RITN at a Boston city-wide radiation tabletop drill, "Longwood Thunder" on 10/26/11 • Conducted the monthly RITN Center conference call to review task completion status and allow a venue for centers to talk to peers
IIA.2 Task 2: Sibling Typing Standard Operating Procedures	**Period 4 Activity:** • No activity during this reporting period.

IIA. Contingency Preparedness – Objective 3: NMDP's critical information technology infrastructure must remain operational during contingency situations that directly affect the Coordinating Center.	
IIA.3 Task 1: I.S. Disaster Recovery	**Period 4 Activity:** • No activity during this reporting period.
IIA.3 Task 2: Critical Facility and Staff Related Functions	**Period 4 Activity:** • Began implementation of improvements to the operations continuity plan based on identified gaps from the operations continuity exercise (BCPeX 2011) • Initiated Operations capacity review to determine impact of case management staffing on current service level agreements
IIB. Rapid Identification of Matched Donors – Objective 1: Increasing the resolution and quality of the HLA testing of volunteers on the registry will speed donor selection.	
IIB.1 Task 1: Increase Registry Diversity	**Period 4 Activity:** • No activity during this reporting period.
IIB.1 Task 2: Evaluate HLA-DRB1 High Res typing – This task is closed.	
IIB.1 Task 3: Evaluate HLA-C Typing of Donors – This task is closed	
IIB.1 Task 4: Evaluate Buccal Swabs	**Period 4 Activity:** • No activity during this reporting period.
IIB 1 Task 5: Enhancing HLA Data for Selected Donors – This task is closed.	
IIB 1 Task 6: Maintain a Quality Control Program	**Period 4 Activity:** During this quarter, 27 additional samples from the Research Repository were sent for B-LCL cell culture/initiation/expansion, for a total of 110. Sixteen cell lines were received in December, with sixteen additional cell lines ready for shipment and anticipated in early January. Thirty-five of the original 83 samples are awaiting culture quality control results, 8 have positive growth and are in process, and 8 had negative growth.

	One hundred of the 110 were sent for HR-HLA A, C, B, DRB1, DRB3/4/5, DQB1, DPB1 confirmatory typing to ensure accuracy of typings entered into the QC database; results are expected in mid-January. Upon confirmation of typing, the 16 cell lines received to date, as well as the 16 lines anticipated in early January, will be immediately processed and incorporated into the regular QC rotation, bringing the total number of buccal QC Masters to 444. A recent analysis shows 608 buccal QC Masters are required to challenge our ABDR recruitment typing laboratories with unique cell lines every 8 weeks.
IIB. Rapid Identification of Matched Donors – Objective 2: Primary DNA typing data can be used within the registry to improve the quality and resolution of volunteer donor HLA assignments.	
IIB 2 Task 1: Collection of Primary Data	**Period 4 Activity:** • No activity during this reporting period.
IIB 2 Task 2: Validation of Logic of Primary Data – This task is closed.	
IIB 2 Task 3: Reinterpretation of Primary Data – This task is closed.	
IIB 2 Task 4: Genotype Lists & Matching Algorithm	**Period 4 Activity:** • HL7: Collaboration with Amnon Shabo (co-chair of HL7 Clinical Genomics Work Group) including: 1. Exploring use of HL7 Clinical Genomics Work Group's Genetic Testing Report (GTR) as a template for HLA typing reports. The GTR is an implementation of the HL7 CDA (Clinical Document Architecture). 2. developing a RMIM based message that would encapsulate HML into the message 3. establishing collaborations with Hadassah Hospital and Northwestern Univ for potential pilot of exchanging HLA data in HL7 message • HL7: Registered NMDP in HL7 OID space (2.16.840.1.113883.3.1470), other local artifacts will be branches from this node, e.g. genotype list • Data Standards: exploring vocabularies & data Types:

	- LOINC - 418 ids currently exist with class type of HLA (4 for PANAL-HLA) - Evaluating how we can leverage caDSR • Explored how we can leverage QR Codes (2D Bar Codes) in HLA typing reports, e.g., pointing to a external reference describing an allele, or genotype list. Demonstrated use with a QRCODE that points to a page on IMGT/HLA describing A*01:01:01:01 • Presented HL7 and LSDAM resources/activities to HIEDFS group (HLA Information Exchange Data Format Standards). This is a consortium of 10 commercial HLA typing kit vendors.
IIB. Rapid Identification of Matched Donors – Objective 3: Registry data on HLA allele and haplotype frequencies and on the nuances of HLA typing can be used to design computer algorithms to predict the best matched donor.	
IIB.3 Task 1: Phase I of EM Haplotype Logic	**Period 4 Activity:** We have implemented the third version of the HapLogic algorithm with increased precision and clarity during this reporting period to include: • 3 locus matching → 5 locus matching • x of 6 → x of 8, x of 10 predictions • 5 broad race groups → 5 broad and 18 detailed race groups • Ensuring visibility of NMDP's best matched donors and cords • More precision for mismatch searches • Better aligned with clinical practice
IIB 3 Task 2: Enhancement of EM Algorithm	**Period 4 Activity:** • Completed validation of 6-locus haplotype frequency data in context of new matching algorithm HapLogic III. • HapLogic III released on December 19, 2011 with significant performance enhancements achieved. • First draft of manuscript describing 6-locus haplotype frequency data circulated to co-authors. • DPA1~DPB1 haplotype frequency manuscript submitted to journal Immunogenetics.
IIB 3 Task 3: Optimal Registry Size	**Period 4 Activity:** • Continued development of draft of Registry Models Physician-Oriented manuscript in collaboration

Analysis	with Mary Eapen of CIBMTR. • Developed method to calculate 0/6-6/6 matching between 2 individuals for solid organ and BMT dual transplant research. • Preliminary report on registry size analysis for Canada presented. • Abstract on cord inventory modeling for study on CCR5-delta32 cord transplantation as potential HIV cure awarded oral presentation for Tandem BMT meeting in February.
IIB 3 Task 4: Target Under- Repre-sented Phenotypes	**Period 4 Activity:** • Refined diversity scores calculated from imputed genotype probabilities. Created counts for diploid allele sets (equivalent to HLA phenotype) from imputed probabilities for evaluating genetic patterns in different race/ethnicity groups. • Began collaborative effort with ESRI to investigate predicting spatial location of specific genotypes for recruiting purposes. Initial modeling has begun and is being tested. • Loaded the new IMP_RES database with imputed and normalized HLA information, demographic data, and a calculated diversity score based on genotype-predicted-likelihood. • Built 40,000 country-specific BMDW maps utilizing our automated process. • Completed posters accepted at the ASHI and ASHG annual conferences for sharing importance and usefulness of Global BMDW maps. • Attended Health GIS conference and researched method for testing our ability to represent and predict where specific HLA types are most likely to be located geographically.
IIB 3 Task 5: Bioinformatics Web Site – This task is closed.	
IIB 3 Task 6: Consultants to Improve Algorithm – This task is closed.	
IIB 3 Task 7: Population Genetics – This task is closed.	
IIB 3 Task 8: Haplotype Matching – This task is closed.	
IIB 3 Task 9: Global Haplotype/Benchmark – This task is closed.	

IIB. Rapid Identification of Matched Donors – Objective 4: Reducing the time and effort required to identify closely matched donors for patients in urgent need of HSC transplants will improve access to transplantation and patient survival in the context of a contingency response and routine patient care.	
IIB.4 Task 1: Expand Network Communications – This task is closed.	
IIB.4 Task 2: Central Contingency Management	**Period 4 Activity:** TC Search Proficiency Study completed accrual through September as an initial summary for an abstract submission. The analysis included 566 searches that were newly formal for donor requests, from 130 US Transplant Centers. The searches were evaluated for donor selection and rated (0-3) on three factors: 1) patient HLA typing; 2) search strategy; and 3) number of donors selected. The rating for each factor was summed for an overall score for each search, 9.0 was the highest rating. The searches were stratified as perfect (score of 9.0) and not perfect (<9). The study included statistical analysis of search specific factors to determine if there was a favorable impact on search proficiency. The factors included were: TC Procurement level (not significant), use of Custom Search Support (significant), use of Search Strategy Advice (not significant), CHTC staff at TC (significant), and a difficult search (not significant). The study was summarized in October for an abstract submission to the 2012 Tandem (ASBMT/CIBMTR) meetings, which was selected for poster presentation. A manuscript submission is planned for FY2012 which will include additional data on searches accrued and evaluated through December 2011.
IIB.4 Task 3: Benchmarking Analysis – This task is closed.	
IIB.4 Task 4: Expand Capabilities of Collection and Apheresis Centers – This task is closed.	
IIC. Immunogenetic Studies – Objective 1: HLA mismatches may differ in their impact on transplant outcome, therefore, it is important to identify and quantify the influence of specific HLA mismatches. In contingency situations it will not be possible to delay transplant until a perfectly matched donor can be found.	
IIC.1 Task 1: Donor Recipient Pair Project	**Period 4 Activity:** In 1994 a retrospective D/R Pair HLA typing project to characterize class I and class II alleles of donor/recipient paired samples from NMDP's Repository was initiated. The goals of this ongoing research project are to assay the impact of DNA-based HLA matching on unrelated donor transplant outcome, develop strategies for optimal HLA matching, evaluate the impact of matching at alternative HLA loci on

	transplant outcome and finally to promote the development of DNA-based high resolution HLA typing methodologies. Presence/absence typing of 14 KIR loci (2DL1-5, 2DS1-5, 3DL1-3 and 3DS1) has been included. • Auditing of 175 pairs typed for HLA and KIR in SG27 has continued. Discrepancy and no make resolution have continued. • Initial auditing of HLA and KIR in SG28 has begun and will continue throughout next quarter. • Final results for SG 29 recipient/cord pairs (120) have been received for both HLA and KIR during the period of performance of September 01, 2011 to December 31, 2011. • To date over 2400 pairs and 1180 additional donors have been typed for presence/absence of 14 KIR loci (2DL1-5, 2DS1-5, 3DL1-3 and 3DS1).
IIC. Immunogenetic Studies – Objective 2: Even when patient and donor are HLA matched, GVHD occurs so other loci may play a role.	
IIC 2 Task 1: Analysis of non-HLA loci	**Period 4 Activity:** The Immunobiology Project Results (IPR) database and its applications allow for storage and analysis of all immunogenetic data collected on NMDP research samples. This database has replaced the existing HLA donor/recipient pair's database and facilitates storage and analysis of data from other immunogenetic loci (KIR, microsatellites, single nucleotide polymorphisms, etc). During This Period: • The application was ported to more powerful and fault-tolerant application servers. • ID report promoted to production. • Completed Pairs report promoted to production. • Discrepancy report promoted to production. • Added support for allele-code expansion in production. • Correction/upgrading of historical typings in preparation for migration into IPR.

	• Approximately a dozen bug fixes or minor upgrades. • Several enhancements to improve the look-and-feel of the application.
IIC 2 Task 2: Related Pairs Research Repository – This task is closed.	
IIC 2 Task 3: CIBMTR Integration – This task is closed.	
IID. Clinical Research in Transplantation – Objective 1: Clinical research in transplantation improves transplant outcomes and supports preparedness for a contingency response.	
IID.1 Task 1: Observational Research, Clinical Trials and NIH Transplant Center	**Period 4 Activity:** **Prospective Studies; RCI BMT** • During this quarter, monitoring activities continued at participating donor centers for the PBSC vs. Marrow clinical trial. • Accrual on the Adult Double Cord trial was completed in the previous quarter but site payments occurred this quarter. Staff continued to coordinate, manage data collection and monitor sites. • Activities continued on the Long Term Donor Follow up project. To date, more than 9800 donors have been enrolled. During this period the remaining two NMDP Operated centers donors were transferred to the Survey Research Group to perform all follow up contracts associated with this study. Donor Centers continue to actively perform consent sessions with donors during their standard work-up process. • During this reporting period, database management and system updates were performed to the AdvantageEDC system being used for both the Double Cord and Revelimid trials. **NIH Transplant Center** • NMDP provided support for donor/cord blood unit identification, selection and collection for the NIH intramural unrelated donor transplant program. Activity in the last quarter was as follows: o 12 formal searches o 57 donor confirmatory typing blood sample and IDM testing requests

- 4 cord blood unit confirmatory typing requests
- 2 cord blood units
- 11 PBSC collections

Cord Blood Research

- The analysis evaluating the likelihood of finding a non-inherited maternal antigen/allele (NIMA) match for HLA mismatched cord blood unit for transplant when upfront maternal typing is not available. The retrospective analysis compared the frequencies of the NIMA matched and mismatched HLA- A, B antigens or DRB1 alleles found in the Eurocord/NMDP/CIBMTR study to determine any significant differences.
  - Results have been incorporated into a manuscript and submitted to *Blood*.
- Development of the anti-HLA donor specific antibody study of recipients transplanted with cord blood units was initiated.
- Two cord blood workshops were conducted at the 2011 NMDP Council Meeting. Each workshop was well attended and received excellent ratings from the attendees.
  - New Research to Improve Cord Blood Transplant Outcomes: This workshop will offer some of the cutting-edge work focused on improving cord blood outcomes by addressing some of the limitations of the graft source.
  - New Cord Blood Matching Concepts: This workshop will provide recent findings on extended HLA matching (role of the HLA-C locus), matching for non-inherited maternal antigens, and the impact of pre-existing cord specific anti-HLA antibodies in cord blood transplant recipients.
- The white paper detailing recommendations/guidelines for the assessment of new assays (potency or other assays) relevant to cord blood banking and/or transplantation published in Cytotherapy March 2011 has generated interest from potential industry partners.
  - Work continued on protocol development and finalization to assess inter-laboratory variability

utilizing the HALO assay.

- Work continued on a study to assess CBU characteristics (viability, TNC, CFU and CD34) pre-freeze and post thaw. Segment evaluation prior to unit release was under consideration as a third evaluation point. Results of a survey to the cord blood banks were analyzed and the unit release testing data deemed too variable for meaningful analysis. The study will proceed with pre-freeze and post-thaw characteristics only.

CIBMTR IT

Significant strides were made in delivering new functionality, improving data quality, data capture and data reporting through the CIBMTR IT suite of applications.

- The FormsNet2 functionality to support the Cord Blood IND and Adverse Events management was implemented on September 13, 2011. There were no post-production defects reported. This effort delivered components for enrollment, data collection of adverse events and product deviations (7 forms), tracking and reporting and medical monitoring. This project delivers functionality to meet the FDA requirements to collect and display Licensure status and IND information on CBUs by October 2011. An additional release was implemented in October 2011 to support scope additions for Adverse Event follow-up needs.
- FormsNet3 implementation proceeds utilizing the Agile methodology approach, which will enable the team to deliver results more quickly, be more adaptable to change, and to build in quality. The first iteration delivered 2 weeks ahead of schedule.
- AGNIS collaboration with external partners expands with first production certificate for submission with a vendor (U of Utah through RemedyMD). The AGNIS team continues to provide development, form mapping efforts and testing of Pre-Transplant form submission support to the EBMT to facilitate data exchange.
- Two additional transplant centers have been authorized to retrieve form data using the AGNIS functionality built into the Stemsoft BMTBase 4.0 product.
    - A total of 26 centers have been authorized for form retrieval

	○ 21 of these centers have retrieved completed forms through this AGNIS interface. • Infrastructure improvements include reliability of deployments by implementing automated builds & configuration for the Management Reporting Website and FN3 which reduces manual errors in the build process.
IID.1 Task 2: Research with NMDP Donors – This task is closed.	
IID.1 Task 3: Expand Immuno-biology Research	**Period 4 Activity:** The CIBMTR IBWC met monthly during the quarter to discuss progress on ongoing research studies • The IBWC received 12 new proposals for review at the 2012 IBWC meeting at the 2012 BMT Tandem meetings. ○ 8 proposals were determined to be novel projects and will be reviewed at the meeting • The Co-Scientific Director of the IBWC attended the 2011 ASH meeting in San Diego and met with several investigators with active IBWC studies to plan additional analyses and publications. • One abstract was presented: ○ Minoo Battiwalla, et al., *HLA DR15 antigen status does not impact graft-versus-host disease or disease-free survival in HLA-matched sibling transplantation for hematologic disease.* Poster presentation 2011 ASH meeting. • One abstract was accepted: ○ Fabio Giglio, et al., *KIR3DL1/S1 and HLA-B alleles combine to influence unrelated hematopoietic stem cell transplantation outcomes.* Oral presentation 2012 BMT Tandem Meetings. • Four manuscripts were submitted: ○ Jeffrey Venstrom, et al., *Donor activating KIR2DS1 protects against acute myeloid leukemia relapse in an HLA-dependent manner.* Submitted to New England Journal of Medicine. ○ Katharina Fleischhauer, et al., *Non-permissive HLA-DPB1 T cell epitope mismatches*

	increase mortality after unrelated donor hematopoietic cell transplantation. Submitted to Lancet Oncology. o Kim Pearce, et al., *Analysis of non-HLA genomic risk factors in HLA-matched unrelated donor hematopoietic cell transplantation for chronic myeloid leukemia.* Submitted to Hematologica. o Vanderson Rocha, et al., *Effect of HLA-matching recipients to donor non-inherited maternal antigens on outcomes after mismatched umbilical cord blood transplantation for hematologic malignancies.* Submitted to Blood.

ACRONYM LIST

AABB	American Association of Blood Banks	HR	High Resolution
AFA	African American	HRSA	Health Resources and Services Administration
AGNIS	A Growable Network Information System	HSC	Hematopoietic Stem Cell
AML	Acute Myelogenous Leukemia	IBWC	Immunobiology Working Committee
ABD	Antigen Binding Domain	IDM	Infectious Disease Markers
API	Asian Pacific Islander	IHWG	International Histocompatibility Working Group
ARS	Acute Radiation Syndrome (also known as Acute Radiation Sickness)	IPR	Immunobiology Project Results
ASBMT	American Society for Blood and Marrow Transplantation	ICRHER	International Consortium for Research on Health Effects of Radiation
ASHI	American Society for Histocompatibility and Immunogenetics	IND	Investigational New Drug
B-LCLs	B-Lymphoblastoid Cell Lines	IS	Information Services
BARDA	Biomedical Advanced Research and Development Authority	IT	Information Technology
BBMT	Biology of Blood and Marrow Transplant	IRB	Institutional Review Board
BCP	Business Continuity Plan	JCAHO	Joint Commission on Accreditation of Healthcare Organizations
BCPeX	Business Continuity Plan Exercise	KIR	Killer Immunoglobulin-like Receptor
BMCC	Bone Marrow Coordinating Center	MDACC	MD Anderson Cancer Center
BMDW	Bone Marrow Donors Worldwide	MDS	Myelodysplastic Syndrome
BMT	Bone Marrow Transplantation	MHC	Major Histocompatibility Complex
BMT CTN	Blood and Marrow Transplant - Clinical Trials Network	MICA	MHC Class I-Like Molecule, Chain A
BODI	Business Objects Data Integrator	MICB	MHC Class I-Like Molecule, Chain B
BRT	Basic Radiation Training	MKE	Milwaukee
C&A	Certification and Accreditation	MRD	Minimal Residual Disease
CAU	Caucasian	MSKCC	Memorial Sloan-Kettering Cancer Center
CBMTG	Canadian Blood and Marrow Transplant Group	MSP	Minneapolis
CBB	Cord Blood Bank	MUD	Matched Unrelated Donor
CBC	Congressional Black Caucus	NAC	Nuclear Accident Committee

CBS	Canadian Blood Service	NCBM	National Conference of Black Mayors
CBU	Cord Blood Unit	NCI	National Cancer Institute
CHTC	Certified Hematopoeitic Transplant Coordinator	NEMO	N-locus Expectation-Maximization using Oligonucleotide typing data
CIBMTR	Center for International Blood & Marrow Transplant Research	NHLBI	National Heart Lung and Blood Institute
CIT	CIBMTR Information Technology	NIH	National Institutes of Health
CLIA	Clinical Laboratory Improvement Amendment	NIMS	National Incident Management System
CME	Continuing Medical Education	NK	Natural Killer
CMF	Community Matching Funds	NLE	National Level Exercise
COG	Children's Oncology Group	NMDP	National Marrow Donor Program
CREG	Cross Reactive Groups	NRP	National Response Plan
CSS	Center Support Services	NST	Non-myeloablative Allogeneic Stem Cell Transplantation
CT	Confirmatory Testing	OCR/ICR	Optical Character Recognition/Intelligent Character Recognition
CTA	Clinical Trial Application	OIT	Office of Information Technology
DC	Donor Center	OMB	Office of Management and Budget
DHHS-ASPR	Department of Health and Human Service – Assistant Secretary Preparedness and Response	ONR	Office of Naval Research
DIY	Do it yourself	P2P	Peer-to-Peer
DKMS	Deutsche Knochenmarkspenderdatei	PBMC	Peripheral Blood Mononuclear Cells
DMSO	Dimethylsulphoxide	PBSC	Peripheral Blood Stem Cell
DoD	Department of Defense	PCR	Polymerase Chain Reaction
DHHS-ASPR	Department of Health and Human Services – Assistant Secretary for Preparedness and Response	PSA	Public Service Announcement
DNA	Deoxyribonucleic Acid	QC	Quality control
DR	Disaster Recovery	RCC	Renal Cell Carcinoma
D/R	Donor/Recipient	RCI BMT	Resource for Clinical Investigations in Blood and Marrow Transplantation
EBMT	European Group for Blood and Marrow	REAC/TS	Radiation Emergency Assistance Center/Training Site

	Transplantation		
EDC	Electronic Data Capture	RFP	Request for Proposal
EFI	European Federation of Immunogenetics	RFQ	Request for Quotation
EM	Expectation Maximization	RG	Recruitment Group
EMDIS	European Marrow Donor Information System	RITN	Radiation Injury Treatment Network
ENS	Emergency Notification System	SBT	Sequence Based Typing
ERSI	Environment Remote Sensing Institute	SCTOD	Stem Cell Therapeutics Outcome Database
FBI	Federal Bureau of Investigation	SG	Sample Group
FDA	Food and Drug Administration	SLCBB	St. Louis Cord Blood Bank
FDR	Fund Drive Request	SLW	STAR Link® Web
FLOCK	Flow Cytometry Analysis Component	SSA	Search Strategy Advice
Fst	Fixation Index	SSO	Sequence Specific Oligonucleotides
GETS	Government Emergency Telecommunications Service	SSP	Sequence Specific Primers
GCSF	Granulocyte-Colony Stimulating Factor (also known as filgrastim)	SSOP	Sequence Specific Oligonucleotide Probes
GIS	Geographic Information System	SSRS	Sample Storage Research Study
GvHD	Graft vs Host Disease	STAR®	Search, Tracking and Registry
HCS	HealthCare Standard	TC	Transplant Center
HCT	Hematopoietic Cell Transplantation	TED	Transplant Essential Data
HEPP	Hospital Emergency Preparedness Program	TNC	Total Nucleated Cell
HHQ	Health History Questionnaire	TSA	Transportation Security Agency
HHS	Health and Human Services	UI	User Interface
HIPAA	Health Insurance Portability and Accountability Act	UML	Unified Modeling Language
HIS	Hispanic	URD	Unrelated Donor
HLA	Human Leukocyte Antigen	WGA	Whole Genome Amplification
HML	Histoimmunogenetics Mark-up Language	WMDA	World Marrow Donor Association
		WU	Work-up